



TEST REPORT

No. I14Z47151-EMC01

for

TCT Mobile Limited

GSM Quad band UMTS Tri-band mobile phone

Model Name: A206G

FCC ID: RAD477

with

Hardware Version: PIO

Software Version: D2B

Issued Date: Jul.7th, 2014

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191

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1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

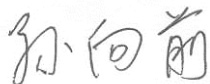
1.3. Project data

Testing Start Date: Jun. 27th, 2014
Testing End Date: Jun. 27th, 2014

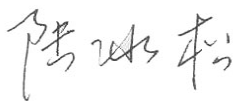
1.4. Signature



Qu Pengfei
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: TCT Mobile Limited
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
Pudong Area Shanghai, P.R. China.
City: Shanghai
Postal Code: 201203
Country: China
Contact Person: Gong Zhizhou
Contact Email: zhizhou.gong@jrdcom.com
Telephone: 0086-21-61460890
Fax: 0086-21-61460602

2.2. Manufacturer Information

Company Name: TCT Mobile Limited
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
Pudong Area Shanghai, P.R. China.
City: Shanghai
Postal Code: 201203
Country: China
Telephone: 0086-21-61460890
Fax: 0086-21-61460602

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM Quad band UMTS Tri-band mobile phone
Model Name	A206G
FCC ID	RAD477
Extreme vol. Limits	3.5VDC to 4.35VDC (nominal: 3.8VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT2	014052000001573	PIO	D2B

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Remarks
AE1	Battery	/	TCT-B-0110
AE2	Battery	/	TCT-B-0099
AE3	Battery	/	TCT-B-0120
AE4	Battery	/	TCT-B-1618
AE5	Battery	/	TCT-B-1285
AE6	Travel charger	/	TCT-CHR-1951
AE7	Travel charger	/	TCT-CHR-1955
AE8	Travel charger	/	TCT-CHR-1314
AE9	Travel charger	/	TCT-CHR-1967
AE10	USB cable	/	1445902DC001
AE11	Headset	/	TCT-E-0636

AE1,AE2,AE3,AE4,AE5

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	1000 mAh
Nominal voltage	3.8 V

AE6, AE7

Model	CBA3002AG0C2
Manufacturer	Tenpao
Length of cable	120cm

AE8, AE9

Model	CBA3002AG0C3
Manufacturer	Yingju
Length of cable	126cm

AE10

Model	CDA3122002C2
Manufacturer	shenhua
Length of cable	99cm

AE11

Model	CCB3160A11C2
Manufacturer	Lianyun
Length of cable	151cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.3	EUT1+ AE2 + AE6	Charger
Set.4	EUT1+ AE2 + AE10	USB

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	10-1-13 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low - Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 10 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	Section 5	B.1	P	A
2	Conducted Emission	15.107(a)	Section 5	B.2	P	A

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATI ON INTERVAL
1	Test Receiver	ESCI	100344	R&S	2015-03-03	1 year
2	Test Receiver	ESCI 7	100948	R&S	2014-07-18	1 year
3	Universal Radio Communication Tester	CMU200	109914	R&S	2015-04-13	1 year
4	Test Receiver	FSV*	101047	R&S	2014-06-30	1 year
5	LISN	ESH2-Z5	829991/012	R&S	2015-04-14	1 year
6	EMI Antenna	VULB 9163	9163-234	Schwarzbeck	2016-09-15	3 years
7	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-15	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

* NOTE: Test equipment not valid for extended during the test.

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 - 2009, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit ($\mu\text{V/m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): $U = 4.3 \text{ dB}$, $k=2$.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
9967.938	35.3	-24.2	38.0	21.500	VERTICAL
9991.563	35.3	-24.2	38.0	21.500	VERTICAL
9993.250	35.2	-24.2	38.0	21.400	VERTICAL
9994.094	35.2	-24.2	38.0	21.400	HORIZONTAL
9989.875	35.1	-24.2	38.0	21.300	VERTICAL
9987.063	35.1	-24.2	38.0	21.300	VERTICAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
9994.938	48.4	-24.2	38.0	34.600	VERTICAL
9122.219	47.3	-26.1	38.4	35.000	VERTICAL
8976.250	47.2	-26.7	38.0	35.900	VERTICAL
9879.906	47.1	-24.9	38.0	34.000	VERTICAL
9956.969	47.1	-24.9	38.0	34.000	VERTICAL
10000.000	47.1	-24.2	38.5	32.800	VERTICAL

Measurement result for Set.2:
USB Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
1874.969	37.0	-35.6	25.3	47.300	HORIZONTAL
1874.688	36.4	-35.6	25.3	46.700	VERTICAL
1254.531	35.6	-41.1	24.1	52.600	VERTICAL
1254.813	35.5	-41.1	24.1	52.500	VERTICAL
1255.094	35.5	-41.1	24.1	52.500	VERTICAL
1264.656	35.3	-40.8	24.1	52.000	VERTICAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
1199.125	51.0	-41.3	24.1	68.200	VERTICAL
1498.656	50.7	-40.3	24.1	66.900	VERTICAL
1498.375	50.4	-40.3	24.1	66.600	HORIZONTAL
1499.219	50.2	-40.3	24.1	66.400	VERTICAL
1496.688	49.9	-40.3	24.1	66.100	VERTICAL
1497.531	49.8	-40.3	24.1	66.000	VERTICAL

Note: The measurement results of Set.1, Set.2 showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.1

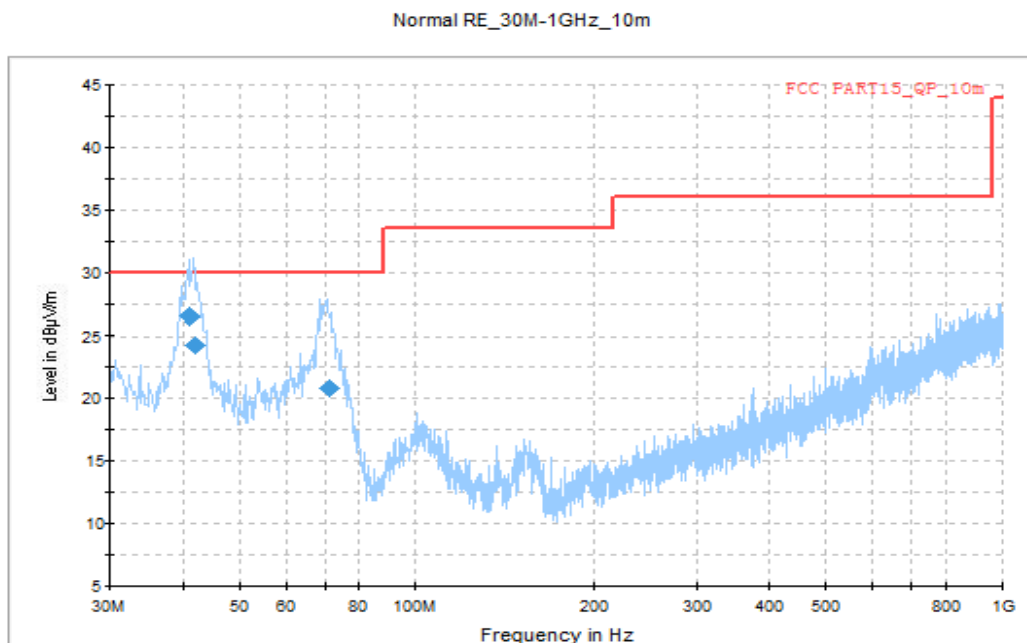


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
41.161250	26.6	221.0	V	240.0	-18.4	3.4	30.0
42.070000	24.3	325.0	V	90.0	-18.4	5.7	30.0
71.158750	20.9	125.0	V	150.0	-21.5	9.1	30.0

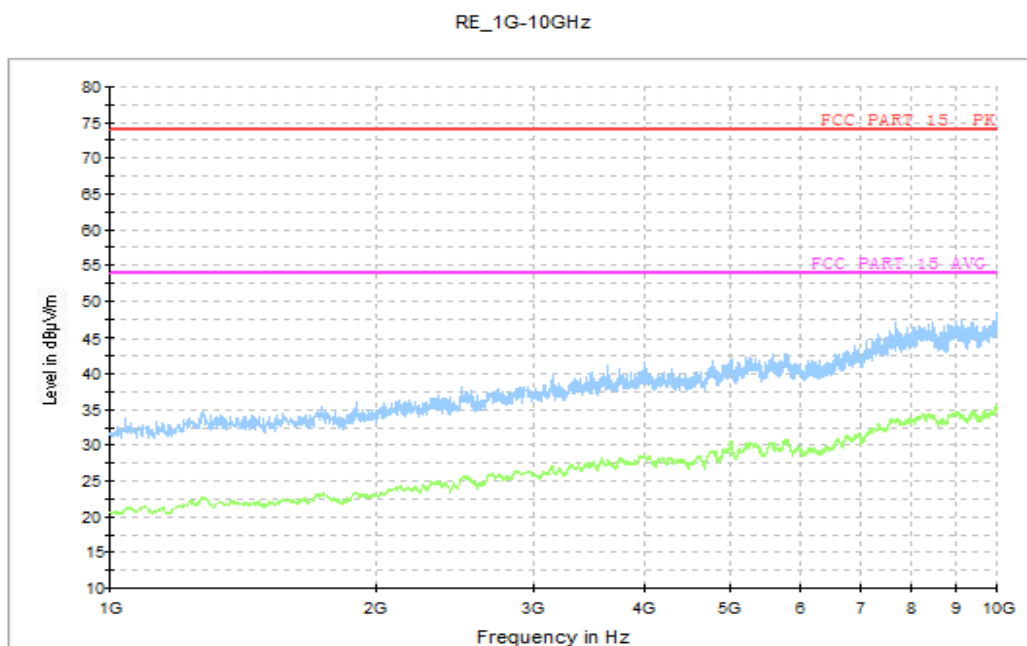


Figure A.2 Radiated Emission from 1GHz to 10GHz

USB Mode, Set.2

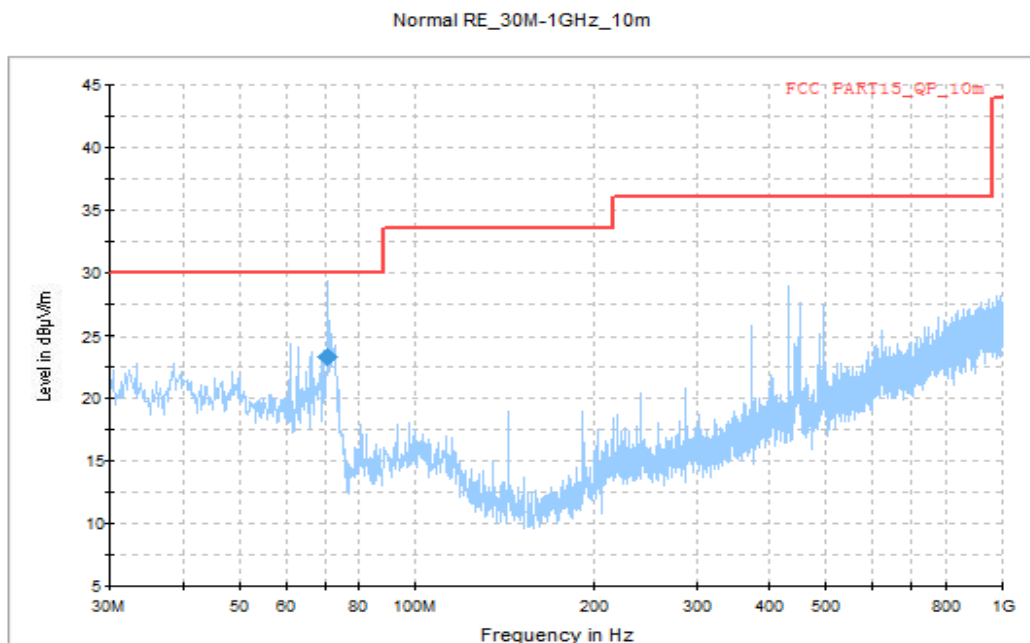


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
70.922500	23.3	225.0	V	67.0	-21.5	6.7	30.0

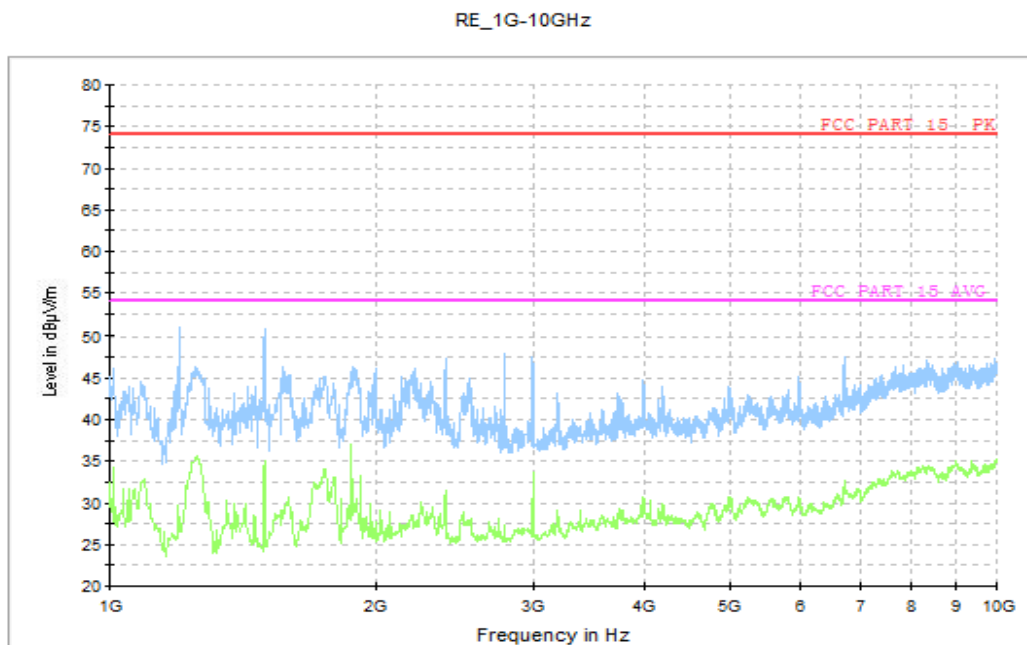


Figure A.4 Radiated Emission from 1GHz to 10GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2009, section 7.3.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U = 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.1

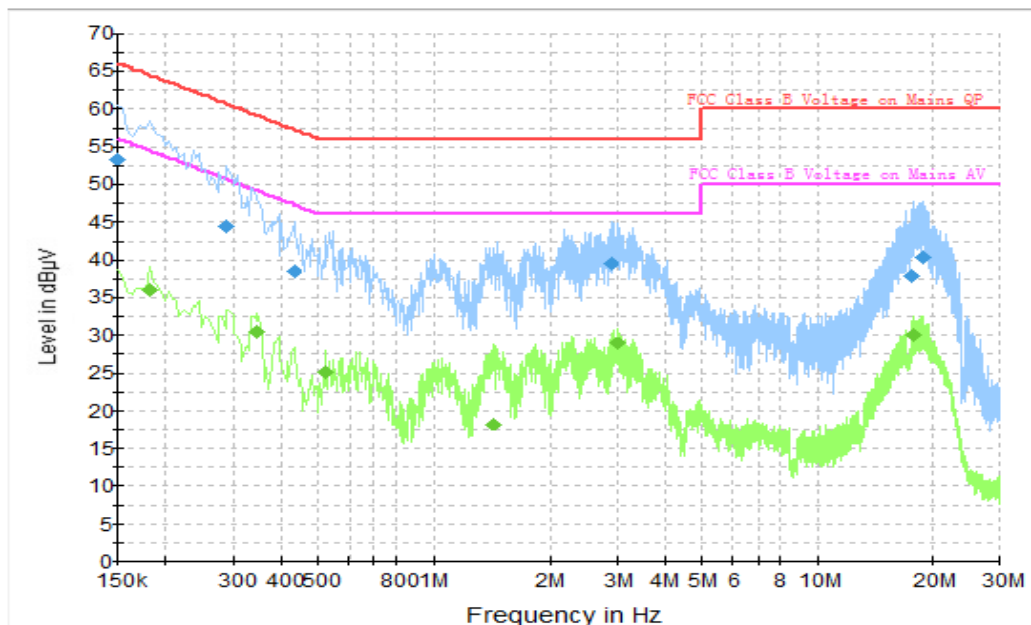


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	53.3	GND	N	9.8	12.7	66.0
0.289500	44.4	GND	L1	9.8	16.2	60.5
0.433500	38.5	GND	L1	9.8	18.7	57.2
2.895000	39.4	GND	L1	9.7	16.6	56.0
17.655000	37.9	GND	L1	9.4	22.2	60.0
19.009500	40.2	GND	N	9.4	19.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.181500	36.0	GND	N	9.8	18.4	54.4
0.348000	30.4	GND	L1	9.8	18.6	49.0
0.523500	25.1	GND	L1	9.8	20.9	46.0
1.423500	18.2	GND	L1	9.7	27.8	46.0
2.998500	29.0	GND	L1	9.7	17.0	46.0
17.956500	30.1	GND	L1	9.4	19.9	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

USB Mode, Set.2

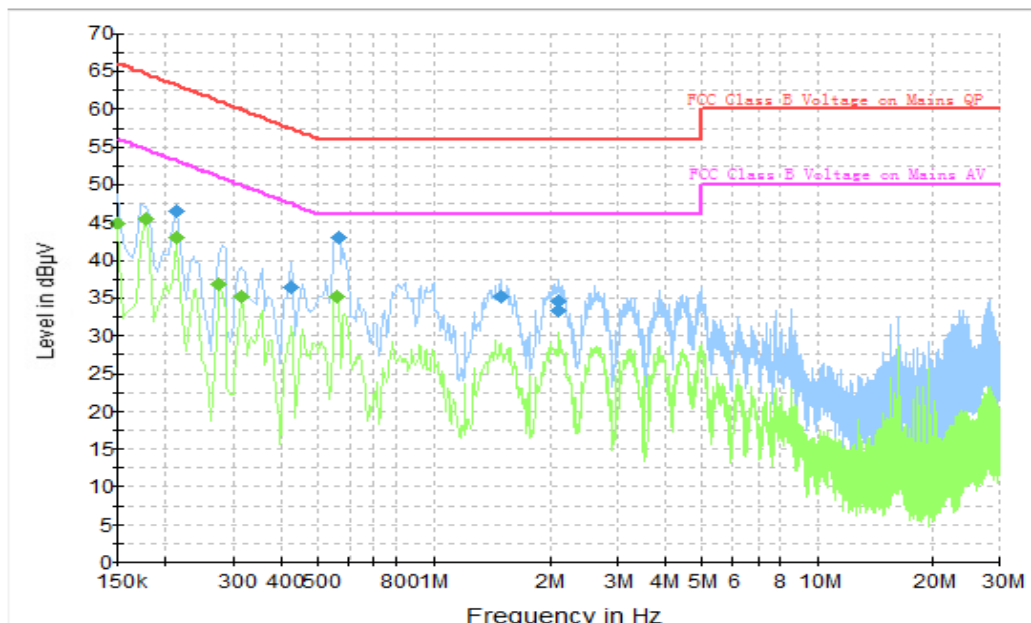


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.213000	46.3	GND	L1	9.8	16.8	63.1
0.424500	36.3	GND	N	9.8	21.1	57.4
0.564000	42.9	GND	N	9.8	13.1	56.0
1.491000	35.1	GND	N	9.7	20.9	56.0
2.121000	33.3	GND	N	9.7	22.7	56.0
2.130000	34.5	GND	N	9.7	21.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	45.0	GND	L1	9.8	11.0	56.0
0.177000	45.4	GND	L1	9.8	9.2	54.6
0.213000	43.0	GND	L1	9.8	10.1	53.1
0.276000	36.9	GND	L1	9.8	14.0	50.9
0.316500	35.2	GND	L1	9.8	14.6	49.8
0.559500	35.2	GND	N	9.8	10.8	46.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

END OF REPORT